

REMARKS

A petition for a one month extension of time has today been filed as a separate paper and a copy is attached hereto.

Responsive to the objection to claim 21, as set forth in paragraph 2 of the office action, claim 21 is amended to depend from claim 20.

The new rejection of claims 18, 21 and 22 for obviousness over Umeda et al and Thomas is respectfully traversed. The examiner's explanation of the rejection in paragraph 4 of the office action overlooked several limitations of claim 18. Firstly, claim 18 recites: "said casing is formed of a plurality of metal plates laminated along the axial direction of said rotary shaft" [emphasis added]. While the examiner does not identify the embodiment of Thomas upon which he relies, none of the embodiments of Thomas have a casing formed of a plurality of metal plates which are laminated together. Other than the embodiment of Fig. 11, the embodiments of Thomas bear some resemblance to the disclosure of a heat sink 4 in Fig. 2 of the primary reference, Umeda et al. However, in those embodiments of Thomas the heat transfer surface "comprises a number of finely pitched posts 45, defining slots 47 therebetween." Thus, in the Thomas embodiments other than shown in Fig. 11, the heat sink is not formed of plates, much less plates laminated together. Also note that if the "posts 45" were to be laminated or placed together in any manner, they would no longer define slots 47 therebetween and the result would be an inoperative embodiment or at least an embodiment which would not function in the manner intended by Thomas. See column

4, lines 10-12 of Thomas.

In the embodiment of Fig. 11 of Thomas, again, there is no casing made of a plurality of plates, much less plates which are laminated together. In the embodiment of Fig. 11 each ring 62 is described as having “a geometry that enhances its pressure differential capacity,” exemplified by an “arc-like cross-section.” See column 6, lines 27-30. Thus, in the embodiment of Fig. 11 the rings are not “plates” and are not “laminated” together. The embodiment of Fig. 11 is defined as having “an optimized heat transfer surface 44” which is intended to allow air flow therethrough inwards toward the fan as taught at column 4, lines 10-12. Accordingly, again, if the rings 62 were plates (which they are not) they could not be laminated together consistent with the teachings of Thomas.

Secondly, the examiner overlooks the language of claim 18 which requires that the axial fan motor be “disposed on one side of said heat sink opposite said heating element” and that the casing and the rotor and blades define “a flow passage for flow of cooling air between said rotor and said casing and for directing the cooling air into the heat sink.” The air flows of Umeda et al and Thomas are in the opposite direction, i.e., from the heat sink into the fan. Further, in neither Thomas nor Umeda et al is the fan motor “disposed on one side of said heat sink opposite said heating element.”

Thirdly, the examiner characterizes heat transfer surface 44 as a “heat sink” which is consistent with the teachings of Thomas. However, the examiner does not identify what he regards as the casing in Thomas. The examiner merely notes that

Thomas teaches "a heat sink having a plurality of metal plates rings." However, applicants' claim 18 requires that the casing (not the heat sink) be "formed of a plurality of metal plates laminated along..." Applicants' claim 18 defines structure wherein the function of the casing is separated from that of the heat sink. As noted above, claim 18 defines the axial fan motor as "being disposed on one side of said heat sink..." and defines the casing as cooperating with the rotor and blades to define a flow passage "for directing the cooling air into the heat sink". The "heat transfer surface 44" of Thomas cannot be separated into such distinct separated elements as recited by claim 18.

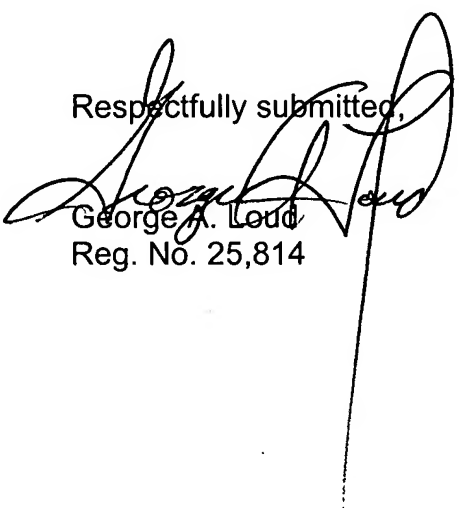
Summarizing, even if the teachings of Umeda et al and Thomas were properly combinable, the result would not be the invention as defined by claim 18 for the reasons stated above.

The rejection of claims 19 and 20 for obviousness with the additional citation of Wang, as set forth in paragraph 5 of the office action, is also traversed because the basic combination of Thomas and Umeda et al does not lead to the present invention, for the reasons stated above. The further combination with Wang is further traversed for the reason that the examiner apparently mischaracterizes the teachings of Wang. For example, the examiner writes "Wang teaches the second plates 20, 30 being in face-to-face relationship and having only an inner circular edge." However, "30" is a reference numeral which Wang uses to refer to the fan, not a "plate." See, for example, column 2, line 58. At column 2, lines 58-62 Wang defines the fan as "composed of multiple mutually superposed heat dissipating plates (31)." and further

states "Thus, in order to have a good heat dissipation effect gaps are defined between adjacent heat dissipating plates (31)." These gaps between plates 31 can be clearly seen in the perspective views of Figs. 1 and 6. Plates which are spaced apart so as to have gaps therebetween are not laminated together and are not in "face-to-face contact."

In conclusion, it is respectfully requested that the examiner reconsider the rejections of record in light of the foregoing comments with a view toward allowance of the pending claims.

Respectfully submitted,


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